CLAIMS

<u>WE CLAIM</u>:

1. A resource held in computer memory, multiple parallel processors which require simultaneous access to the resource and a resource address generator to generate coordinates within the resource, where the resource is divided into different parts with each part being stored in different memory banks, and the resource address generator generates coordinates which are used to select the parts of the resource that are used by each processor, the selection being arranged to ensure that each part is only used by one processor at a time.

2. A resource according to claim 1, where the selection also ensures that each processor uses the parts in the order in which they appear in the resource.

3. A resource according to claim 1, where the resource is a multi-threshold dither matrix used for digitally halftoning a contone color image, in the form of an array of contone color pixel values, to bi-level dots; said multi-threshold dither matrix comprising, for each dither cell location, a fixed set of n thresholds defining $n+1$ intensity intervals within which said dither cell location is defined to be alternately not set and set.

4. A resource according to claim 3, where the multiple parallel processors which require simultaneous access to the resource are multi-threshold units provided for each color component of the image, all of said multi-threshold units being operatively coupled to the multi-threshold dither matrix, and each said multi-threshold unit determining the value of an output dot corresponding to a contone color pixel component value by determining whether the dither cell location corresponding to the location of said output dot is defined to be set within the intensity interval which said contone value uniquely selects.

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5.   A resource according to claim 4, where the dither cell is split into subcells and stored in separately addressable memories from which different multi-threshold values are retrieved in parallel.

6.   A resource according to claim 5, where a four color component contone image is to be halftoned, four separate triple-threshold units may each receive a series of contone color pixel values for respective color components, and a dither cell address generator operates in conjunction with four four-way multiplexors, for respective threshold units, to control the retrieval of four different triple-threshold values from four different subcells of the dither matrix.

7.   A method of accessing resources held in computer memory, where multiple parallel processors require simultaneous access to the resource and there is a resource address generator to generate coordinates within the resource, the method comprising the steps of:
     dividing the resource into different parts;
     storing each part in a different memory bank; and
     operating the resource address generator to generates coordinates which are used to select the parts of the resource that are used by each processor, the selection being arranged to ensure that each part is only used by one processor at a time.

8.   The method of claim 7, comprising the further step of:
     the selection also ensuring that each processor uses the parts in the order in which they appear in the resource.

9.   The method of claim 8, where the resource is a multi-threshold dither matrix for digital halftoning a contone color image, in the form of an array of contone color pixel values, to bi-level dots, said dither matrix comprising, for each dithe rcell location, a fixed set of n thresholds defining $n+1$ intensity intervals within which said dither cell location is defined to be alternately not set and set;

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the multiple parallel processors which require simultaneous access to the resource are multi-threshold units provided for each color component of the image;
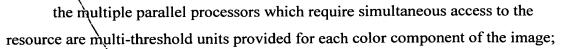
all the multi-threshold units are operatively coupled to the dither matrix; and the method includes the further step of:

determining, for each multi-threshold unit, the value of an output dot corresponding to a contone color pixel component value by determining whether the dither cell location corresponding to the location of said output dot is defined to be set within the intensity interval which said contone value uniquely selects.

10.   The method of claim 9, comprising the step of:

splitting the dither cell into subcells and storing each subcell in a separately addressable memory from which different multi-threshold values are retrieved in parallel.

11.   The method of claim 9, where a four color component contone layer is to be halftoned, four separate triple threshold units each receive a series of contone color pixel values for respective color components, and the method comprises the step of:

operating the dither cell address generator in conjunction with four four-way multiplexors, for respective threshold units, to control the retrieval of four different triple threshold values from four different subcells of the dither matrix.

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